

What is claimed is:

1. A drill stem connection assembly, comprising:
  - a first drill stem section;
  - a second drill stem section;
  - at least one engaging feature located at an end of the first drill stem section;
  - at least one mating feature for accepting the at least one engaging feature, the at least one mating feature located at an end of the second drill stem section; and
  - a securing member for selective placement in cooperation between the first drill stem section and the second drill stem section, wherein when placed in a securing position, the securing member holds the engaging feature securely mated with the mating feature.
2. The drill stem connection assembly of claim 1, wherein the first drill stem section includes a length of drill rod.
3. The drill stem connection assembly of claim 2, wherein the second drill stem section includes a sonde housing.
4. The drill stem connection assembly of claim 2, wherein the second drill stem section includes a tool holder assembly.
5. The drill stem connection assembly of claim 2, wherein the second drill stem section includes a cap assembly having an attachment feature for pulling a product through a drilled hole.
6. The drill stem connection assembly of claim 2, wherein the second drill stem section includes a length of drill rod.
7. The drill stem connection assembly of claim 1, wherein the engaging feature includes a round pin.

8. The drill stem connection assembly of claim 1, wherein the engaging feature includes a substantially square feature.
9. The drill stem connection assembly of claim 1, wherein the mating feature includes a slot.
10. The drill stem connection assembly of claim 1, wherein the securing member includes a threaded bolt for threading into the first drill stem section.
11. The drill stem connection assembly of claim 1, wherein the securing member includes a key for fitting into a slot in both the first drill stem section and the second drill stem section.
12. A drill stem connection assembly, comprising:
  - a first drill stem element and a second drill stem element for mating together to form a drill stem interface;
  - a slot located at an end of the first drill stem element, the slot including a first portion with a first direction of insertion and a second portion having a second direction of insertion different from the first direction of insertion;
  - a protruding portion located at an end of the second drill stem element, the protruding portion being shaped to engage the slot; and
  - a securing member to selectively couple to the second drill stem element at a location within the slot.
13. The drill stem connection assembly of claim 12, wherein the first portion of the slot and the second portion of the slot are substantially perpendicular to each other.
14. The drill stem connection assembly of claim 13, wherein the first portion of the slot is substantially parallel to a drill stem axis.

15. The drill stem connection assembly of claim 12, wherein the protruding portion includes a round pin.
16. The drill stem connection assembly of claim 12, wherein the securing member includes a threaded bolt.
17. A drill stem connection assembly, comprising:  
a first drill stem element and a second drill stem element for mating together to form a drill stem interface;  
a slot located at an end of the first drill stem element, the slot including a first portion with a first direction of insertion and a second portion having a second direction of insertion different from the first direction of insertion;  
a protruding portion located at an end of the second drill stem element, the protruding portion being shaped to engage the slot; and  
a key for insertion between the first drill stem element and the second drill stem element to limit rotation of the first drill stem element with respect to the second drill stem element.
18. The drill stem connection assembly of claim 17, wherein the slot is substantially “L” shaped.
19. The drill stem connection assembly of claim 17, wherein the protruding portion includes a substantially square feature.
20. The drill stem connection assembly of claim 17, further including a pin for placement to hold the key in place.
21. A tool holder assembly, comprising:  
a drill stem connection portion;  
a drilling blade mounting surface;

a fluid channel passing from the drill stem connection portion to the drilling blade mounting surface;

a replaceable nozzle receptacle located adjacent to the drilling blade mounting surface; and

a replaceable nozzle for mating with the replaceable nozzle receptacle.

22. The tool holder assembly of claim 21, wherein the drill stem connecting portion includes a slot.

23. The tool holder assembly of claim 21, wherein the drill stem connecting portion includes a protruding portion for engagement with a slot.

24. The tool holder assembly of claim 21, wherein the replaceable nozzle receptacle includes a tapered geometry.

25. A drilling device, comprising:

a linear drive region with a linear range of motion;

a drilling drive block movable within the linear range of motion;

a drill stem rotation device located on the drilling drive block;

a first drill stem element and a second drill stem element for mating together to form a drill stem interface;

a slot located at an end of the first drill stem element, the slot including a first portion with a first direction of insertion and a second portion having a second direction of insertion different from the first direction of insertion;

a protruding portion located at an end of the second drill stem element, the protruding portion being shaped to engage the slot; and

a securing member to selectively couple to the second drill stem element at a location within the slot.

26. The drilling device of claim 25, wherein the protruding portion includes a round pin.

27. The drilling device of claim 25, wherein the engaging feature includes a substantially square feature.

28. The drilling device of claim 25, wherein the securing member includes a threaded bolt.

29. The drilling device of claim 25, further a storage area to hold sections of drill rod and a handling device to move sections of drill rod between the storage area and the drilling drive block.

30. A method, comprising:

inserting a male portion of a first drill stem element into a female portion of a second drill stem element;

guiding a protruding portion located on the first drill stem element along a first slot direction into a first portion of a slot located on the second drill stem element;

guiding the protruding portion into a second portion of the slot along a second slot direction; and

coupling a securing member to the first drill stem element, wherein the securing member is located within the first portion of the slot.

31. The method of claim 30, wherein guiding the protruding portion located on the first drill stem element along the first slot direction includes guiding the protruding portion along a first slot direction that is parallel to a drill stem axis.

32. The method of claim 31, wherein guiding the protruding portion into the second portion of the slot along the second slot direction includes guiding the protruding portion along a second slot direction that is perpendicular to the first slot direction.

33. The method of claim 30, wherein coupling the securing member to the first drill stem element includes threading a bolt into a threaded hole in the first drill stem element wherein a bolt head protrudes and is located within the first portion of the slot.

34. The method of claim 30, wherein inserting a male portion of a first drill stem element into a female portion of a second drill stem element includes inserting a male portion of a drill rod section into a female portion of a sonde housing.

35. The method of claim 30, wherein inserting a male portion of a first drill stem element into a female portion of a second drill stem element includes inserting a male portion of a drill blade holder into a female portion of a sonde housing.

36. The method of claim 30, wherein inserting a male portion of a first drill stem element into a female portion of a second drill stem element includes inserting a male portion of a drilling blade holder into a female portion of a sonde housing.